STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JOHN ELIAS BALDACCI
GOVERNOR

DAWN R. GALLAGHER
COMMISSIONER

February 7, 2005

Stephen Silva
Chief, Water Quality Branch
U.S. Environmental Protection Agency
Region 1
1 Congress Street, Suite 1100
Boston, MA 02114-2023

RE: UAA for Ragged and Seboomook Lakes

Dear Steve:

The Maine Department of Environmental Protection is pleased to submit for formal review and approval by EPA Volumes I & II of a Use Attainability Analysis (UAA) for Ragged and Seboomook Lakes, located on the West Branch Penobscot River and its tributaries in the unorganized territories of Township T2 R13 WELS, Township T3 R13 WELS, Seboomook Township, Plymouth Township, and Pittston Academy Grant, Somerset and Piscataquis Counties, Maine.

The UAA was prepared by the dam owner, Great Lakes Hydro America, LLC (GLHA), in consultation with the DEP.

We greatly appreciate your assistance and that of other EPA staff during the preparation of this UAA. We understand that this is the first formal UAA that has been prepared for a hydropower storage dam anywhere in the country, and that we are creating a template for use in similar situations in the future.

As you know, on the basis of the UAA and after holding a public hearing, the Board of Environmental Protection voted on November 17, 2004 to recommend that the Maine Legislature adopt a subcategory of the designated uses of Ragged and Seboomook Lakes as habitat fir fish and other aquatic life, as established for Class GPA hydropower impoundments under Maine's water classification program, taking into account the effects of annual drawdowns of up to 20 feet for Ragged Lake and 17 feet for Seboomook Lake. A copy of the Board's decision is attached. The Legislature will be considering a bill implementing this recommendation during its current legislative session.

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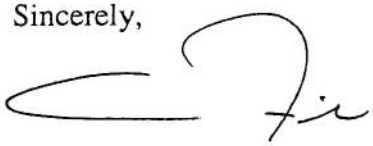
We respectfully request notification from EPA within 30 days that the UAA for Ragged and Seboomook Lakes satisfies the criteria of 40 CFR Section 131.10 (g) and that the adoption by the Legislature of a subcategory of the designated use of Ragged and Seboomoook Lakes based on this UAA will be approvable.

Thank you again for your assistance. Please contact me or the DEP's project manager for the UAA, Dana Murch, if you have any questions.

Sincerely,



Andrew C. Fisk, Director
Bureau of Land & Water Quality

Enclosures

cc: Ralph Abele, EPA
Bill Beckwith, EPA
Ann Williams, EPA
Cynthia Bertocci, BEP (Volume II only)
Terry Hanson, BEP (Volume II only)
F. Allen Wiley, FPL Energy (Volume II only)
Jeff Reardon, Trout Unlimited (Volume II only)
Naomi Schalit, Maine Rivers (Volume II only)
Nick Bennett, Natural Resources Council of Maine (Volume II only)
Jerry Reid, Maine Attorney General's Office (Volume II only)
Dana Murch, DEP (Volume II only)
Dave Courtemanch, DEP (Volume II only)
Ed Logue, DEP (Volume II only)
David Preble, GLHA (w/o enclosures)
GLHA Storage Project Settlement Group (electronically)

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
STATE HOUSE STATION 17 AUGUSTA, MAINE 04333

BOARD ORDER

IN THE MATTER OF

RAGGED AND SEBOOMOOK LAKES	)	USE ATTAINABILITY ANALYSIS
T2 R13 WELS, T3 R13 WELS,	)	
Seboomook Twp., Plymouth Twp., and	)	
Pittston Academy Grant	)	FINDINGS OF FACT AND
Somerset and Piscataquis Counties	)	RECOMMENDATION

Pursuant to the provisions of 38 MRSA Section 464(2-A) and 06-096 CMR Chapter 30 (Special Regulations for Hearings on Applications of Significant Public Interest), the Board of Environmental Protection has considered the Use Attainability Analysis prepared for Ragged and Seboomook Lakes by Great Lakes Hydro America, LLC, and FINDS THE FOLLOWING FACTS:

1. INTRODUCTION

This matter comes to the Board from the Department, which has requested that the Board conduct a Use Attainability Analysis to recommend for adoption new aquatic life and habitat standards for Ragged and Seboomook Lakes, located on the West Branch Penobscot River and its tributaries in the unorganized territories of Township T2 R13 WELS, Township T3 R13 WELS, Seboomook Township, Plymouth Township, and Pittston Academy Grant, Somerset and Piscataquis Counties, Maine.

2. DESCRIPTION OF FACILITIES AND CURRENT OPERATION

Ragged and Seboomook Lakes are part of a storage project that also includes Canada Falls Lake and Caucomgomoc Lake. Together, the four impoundments are operated to store and release water on an annual cycle to benefit downstream hydroelectric generation. In addition, this mode of operation contributes to meeting the needs of various water users and environmental resources located downstream of the project area. The project is licensed to Great Lakes Hydro America, LLC (GLHA) by the Federal Energy Regulatory Commission (FERC) as GLHA Storage Project No. 2634, and is currently pending before FERC for relicensing.

Ragged Lake and Dam. Ragged Lake Dam forms Ragged Lake at the head of Ragged Stream, and is located 44 miles from Millinocket. Ragged Stream flows 3.8 miles from Ragged Lake Dam to its confluence with Caribou Lake, which is part of the Chesuncook Lake impoundment.

The existing Ragged Lake Dam was constructed in 1921 for log driving and water storage purposes, with major improvements to the dam completed in 1975. The existing structure

replaces earlier dams dated back to 1901, which were located about one-half mile upstream from the existing dam. The dam is a 1,163-foot-long earthen embankment and concrete gravity structure, with a maximum height of 50 feet, that consists of: a 900-foot long South embankment with a masonry wall; a 54-foot-long gated spillway section with two slide gates and a log sluice gate; a 209-foot-long North embankment; and appurtenant facilities. The dam also serves as a vehicle access bridge across Ragged Stream and is generally available for public use.

Ragged Lake has a surface area of 2,786 acres at a normal full pond elevation of 1,135 feet USGS datum. The lake consists of two basins. The south basin, adjacent to the dam, is a 534-acre artificial reservoir. The north basin is a natural lake that has been raised by 8 feet by the dam. The lake is currently licensed to operate with a maximum winter drawdown of 20 feet.

Seboomook Lake and Dam. Seboomook Dam is located 72 miles from Millinocket and forms Seboomook Lake at the beginning of the West Branch of the Penobscot River (the North Branch and South Branch join at the upper end of Seboomook Lake). The West Branch below Seboomook Dam flows 24.4 miles to its confluence with Chesuncook Lake, which is impounded by Ripogenus Dam.

The existing Seboomook Dam was constructed in 1936, replacing a series of four earlier timber dams used for log driving and water storage. The dam is a 491-foot-long concrete gravity structure, with a maximum height of 60 feet, that consists of: a retaining wall section and non-overflow section at each end of the dam; a 60-foot-long deep gate section with four deep sluice gates; a 159-foot-long gated spillway section with five slide gates and a log sluice gate; and appurtenant facilities. The dam also serves as a vehicle access bridge across the West Branch and is generally available for public use.

Seboomook Lake is an artificial reservoir with a surface area of 6,838 acres at a normal full pond elevation of 1,073 feet USGS datum. The lake is currently licensed to operate with a maximum winter drawdown of 33 feet.

3. PROPOSED OPERATION

GLHA proposes to operate Ragged and Seboomook Lakes, along with Canada Falls and Caucomgomoc Lakes, in accordance with a July 16, 2004 Offer of Settlement for the GLHA Storage Project ("Settlement"). The parties to the Settlement include Great Lakes Hydro America LLC, Penobscot Indian Nation, Passamaquoddy Tribe, U.S. Bureau of Indian Affairs, U.S. Fish and Wildlife Service, National Park Service, Maine Department of Inland Fisheries and Wildlife, Maine Department of Conservation, Appalachian Mountain Club, American Whitewater, and New England FLOW.

The goal of the Settlement is to provide for the continued operation of the GLHA Storage Project with appropriate long-term environmental protection and enhancement measures that will meet diverse objectives for maintaining a balance of power and non-power values. The parties to the Settlement recognized that the relicensing of the Storage Project offered a unique opportunity to take a watershed approach. The Settlement's water management provisions were developed using a comprehensive approach to achieve the best balance of resource values between a number of river reaches and reservoirs within almost the entire upper West Branch of the Penobscot River watershed. The Settlement contains the terms and conditions for the resolution of Tribal, fisheries, wetlands, wildlife, water management and water quality, recreational, cultural and archaeological, aesthetic, access, land-use, operational, and generation issues raised by the parties in the relicensing process.

Under the terms of the Settlement, Ragged and Seboomook Lakes will be operated with maximum winter drawdowns of 20 feet and 17 feet, respectively.

It is noted that, under the terms of the Settlement, Canada Falls Lake, which is currently licensed to operate with a maximum winter drawdown of 26 feet, will be limited to a maximum winter drawdown of 3.5 feet.

4. PROCEDURAL HISTORY

A request for water quality certification for Storage Project No. 2634 was initially filed with the Department on April 13, 1998, and was subsequently withdrawn and refiled on March 25, 1999, March 3, 2000, February 2, 2001, January 22, 2002, and January 8, 2003. Section 401 of the Clean Water Act requires that any applicant for a federal license or permit to conduct an activity which may result in a discharge into navigable waters obtain a certification that the activity will comply with applicable State water quality standards.

On June 18, 2004, GLHA submitted a copy of the draft Offer of Settlement for the GLHA Storage Project to the Department, and requested that the Department confirm that it would be able to issue a water quality certification for the project consistent with the terms of the Offer of Settlement.

On July 9, 2004, the Department notified GLHA of its conclusion that, in keeping with the Board's recent decision regarding Flagstaff Lake, the proposed drawdowns of Ragged and Seboomook Lakes would result in these lakes violating applicable water quality standards for aquatic life and habitat. The Department also notified GLHA of its determination that, in order for the proposed drawdowns to be approved, a Use Attainability Analysis (or "UAA") would be needed to establish new aquatic life and habitat standards for the lakes.

On July 30, 2004, GLHA filed a copy of the final Offer of Settlement with FERC and the Department.

On August 19, 2004, the Board voted to approve the Department's request that the Board conduct a Use Attainability Analysis to consider for recommendation to the Maine Legislature new aquatic life and habitat standards for Ragged and Seboomook Lakes. The Board also voted to hold a public hearing on the proposed UAA, as required by 38 MRSA Section 464(2-A).

Notice of the hearing and opportunity for intervention in the UAA proceeding was subsequently provided in accordance with the Maine Administrative Procedures Act (5 MRSA Sections 9051-A and 9054) and the Department's Chapter 30 hearing regulations.

On September 16, 2004, GLHA submitted Volume I of a Use Attainability Analysis for Ragged and Seboomook Lakes, prepared by the dam owner in consultation with the Department.

On September 16, 2004, the Board granted intervenor status to petitioner FPL Energy Maine Hydro LLC and to joint petitioners Maine Rivers, Natural Resources Council of Maine, and Trout Unlimited (collectively, "non-governmental organizations" or "NGOs").

In a First Procedural Order dated September 24, 2004, the Board clarified the responsibilities of the parties to the proceeding, set forth the procedures for the conduct of the hearing, and established a schedule for the hearing and associated submissions. Intervenor NGOs filed a timely appeal from that Order on September 30, 2004.

A pre-hearing conference was held on October 6, 2004, to discuss the appeal and any other remaining procedural matters prior to the start of the public hearing. The Board subsquently voted to amend the schedule established in the First Procedural Order to address Intervenor NGOs' concerns regarding the ability of the parties to provide rebuttal testimony by expert witnesses if necessary.

An adjudicatory hearing to receive testimony and comment on the proposed UAA was held on October 6, 2004 in Bangor.

5. APPLICABLE WATER QUALITY STANDARDS

a. Classification. Ragged and Seboomook Lakes are currently classified as Class GPA waters. 38 MRSA Section 465-A.

b. Designated Uses. Class GPA waters shall be of such quality that they are suitable for the designated uses of drinking water after disinfection; recreation in and on the water; fishing; industrial process and cooling water supply; hydroelectric power generation; navigation; and as habitat for fish and other aquatic life. The habitat of Class GPA waters shall be characterized as natural. 38 MRSA Section 465-A(1)(A).

c. Numeric Standards. The numeric standards for the receiving waters are as follows.

Class GPA waters shall be described by their trophic state based on measures of the chlorophyll "a" content, Secchi disk transparency, total phosphorus content and other appropriate criteria. Class GPA waters shall have a stable or decreasing trophic state, subject only to natural fluctuations and shall be free of culturally induced algal blooms which impair their use and enjoyment. The number of Escherichia coli bacteria of human origin in these waters may not exceed a geometric mean of 29 per 100 milliliters or an instantaneous level of 194 per 100 milliliters. 38 MRSA Section 465-A(1)(B).

d. Narrative Standards. The narrative standards for the receiving waters are as follows.

There may be no new direct discharge of pollutants into Class GPA waters. Discharges into these waters licensed prior to January 1, 1986 are allowed to continue only until practical alternatives exist. 38 MRSA Section 465-A(1)(C)

The habitat and aquatic life criteria of Class GPA are deemed to be met in an existing hydropower impoundment classified as GPA if the impounded waters, at a minimum, satisfy Class C aquatic life criteria (the receiving waters shall be of sufficient quality to support all species of fish indigenous to the receiving waters and maintain the structure and function of the resident biological community), provided that, where the actual quality of the impounded waters attains any more stringent characteristic or criteria, that existing water quality must be maintained and protected. 38 MRSA Section 464(9).

6. USE ATTAINABILITY ANALYSIS AND DESIGNATED USES

Pursuant to 38 MRSA Section 464(2-A), the Board must conduct a use attainability analysis prior to proposing to the Legislature the removal of a designated use or the adoption of a subcategory of such a designated use that requires less stringent criteria.

A "use attainability analysis" (UAA) is a structured scientific assessment of the factors affecting the attainment of a designated use in a water body. The assessment may include consideration of physical, chemical, biological and economic factors. 38 MRSA Section 466(11-A).

"Designated use" means the use specified in water quality standards for each water body under 38 MRSA Sections 465 to 465-C and Sections 467 to 470 whether or not that use is being attained. A designated use includes its associated habitat characteristic under 38 MRSA Section 465 to 465-C. 38 MRSA Section 464(2-A)(F).

The Board may not recommend to the Legislature the removal of a designated use or the establishment of a subcategory of a use, if: (1) the use is an existing use; (2) the use can be attained by implementing effluent limits required under the Clean Water Act and by

implementing cost-effective and reasonable best management practices for nonpoint source control; (3) the water body in question is currently attaining the designated use; or (4) adoption of the recommendation allows the introduction of a new discharge or the expansion of an existing discharge into the water body in question. 38 MRSA Section 464 (2-A)(B).

The Board may adopt a recommendation for the removal of a designated use or creation of a subcategory of a designated use only after holding an adjudicatory hearing in the affected area or adjacent to the affected area. 38 MRSA Section 464(2-A)(C).

A finding by the Board that attainment of a designated use is not feasible must be supported by a demonstration that the conditions of EPA's Water Quality Standards Regulation, 40 CFR 131.10(g), are met. 38 MRSA Section 464(2-A)(D).

Under 40 CFR 131.10(g), States may remove a designated use which is not an existing use, or establish subcategories of a use if the State can demonstrate that attaining the designated use is not feasible because:

(1) Naturally occurring pollutant concentrations prevent the attainment of the use; or

(2) Natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment if the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met; or

(3) Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place; or

(4) Dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in the attainment of the use; or

(5) Physical conditions related to the natural features of the water body, such as the lack of proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses; or

(6) Controls more stringent than those required by sections 301(b) and 306 of the Clean Water Act would result in substantial and widespread economic and social impact.

If the Board adopts a proposal to remove a designated use or adopt a subcategory of a designated use, it shall forward that proposal to the joint standing committee of the Legislature having jurisdiction over natural resources matters at the next regular session of

the Legislature. The Board may not forward any other recommendation to the Legislature under this subsection. The Legislature has sole authority to make changes in the designated uses of the waters of the State, including the creation of a subcategory of a designated use. 38 MRSA Section 464(2-A)(E).

7. CURRENT ATTAINMENT OF DESIGNATED USES

The evidence in the record indicates that the aquatic communities in Ragged and Seboomook Lakes are severely altered and depleted as a result of the historic drawdowns of these lakes. The effects of these drawdowns include (1) reduced permanent aquatic habitat, both in area and volume, as a result of dewatering, (2) direct mortality through stranding and dessication of aquatic organisms, (3) displacement and concentration of organisms, (4) downstream "washout" of organisms, (5) loss of habitat structure, (6) reduced primary and secondary productivity, (7) loss of species diversity, and (8) freezing of habitats. Applicable water quality standards require that Class GPA waters in hydropower impoundments be of sufficient quality to support all species of fish indigenous to the receiving waters and maintain the structure and function of the resident biological community [38 MRSA Section 464(9)]. The Department has determined that the historic drawdowns of Ragged and Seboomook Lake result in these lakes not being suitable for the designated use of habitat for fish and other aquatic life.

The evidence in the record indicates that, while Class GPA aquatic life standards for hydropower impoundments are not met in Ragged and Seboomook Lakes, these lakes do support some fish species and other aquatic organisms even with historic drawdowns.

Finally, the evidence in the record indicates that there are no existing discharges of pollutants from point sources to either Ragged Lake or Seboomook Lake, nor is there any evidence in the record that nonpoint source discharges are preventing the attainment of aquatic life standards in either lake.

8. FEASIBILITY OF ATTAINING DESIGNATED USES

There must be both sufficient quality and quantity of habitat for aquatic organisms to meet aquatic life standards. The Department has found that, generally, water levels providing wetted conditions for 75% of the littoral zone of a lake or pond, as measured from full pond conditions, are sufficient to meet aquatic life and habitat standards. This is not a rule, but a guideline the Department applies on a case-by-case basis, informed by best professional judgment, and considering site-specific data and circumstancces. The littoral zone is the shallow-water zone of a lake where there is sufficient light penetration to the bottom to support photosynthesis and where the highest concentration of aquatic organisms typically exists, including rooted or attached organisms (e.g., perennial aquatic plants), immobile species (e.g., mussels), and species requiring a full year or more in shallow water to complete

their life cycle (e.g., many species of fish and aquatic insects). In particular, the littoral zone provides spawning and nursery habitat for many resident fish species. In this case, the historic drawdowns of Ragged and Seboomook Lake prevent the attainment of aquatic life and habitat standards by causing the aquatic communities of these lakes to be severely altered and depleted and thereby failing to maintain the structure and function of these communities.

Using littoral zone curves developed by GLHA, the Department has calculated that the drawdowns of Ragged and Seboomook Lakes would need to be limited to 4.5 feet and 5.4 feet, respectively, in order to maintain 75% of the full pond littoral zone of each lake. In this case, applying best professional judgment, and after consideration of site-specific data and circumstances, the Department believes that maintaining wetted conditions in 75% of the full pond littoral zone of Ragged and Seboomook Lakes is necessary to meet aquatic life and habitat standards.

It is noted that limiting the drawdown of Canada Falls Lake to 3.5 feet, as proposed under the terms of the Settlement, will maintain more than 75% of the full pond littoral zone of the lake and thus, applying best professional judgment, and after consideration of site-specific data and circumstances, should be adequate to attain Class GPA aquatic life standards.

The feasibility of operating Ragged and Seboomook Lakes with the limited drawdowns needed to meet current water quality standards is discussed below.

a. Winter Gate Operation. Neither the Ragged Lake Dam nor the Seboomook Dam are constructed with overflow spillways. As a consequence, any runoff reaching the lake must either be stored in the lake or passed out of the lake through a gate opening. Currently, winter gate operation is not practical, due to the remoteness of the dams (44 and 72 miles from Millinocket, respectively), the difficulty in access to the dams on unplowed or muddy roads during the winter and spring, the lack of permanent sources of electric power to operate the gates, and severe icing of the gate structures. Due to these factors, Ragged and Seboomook Lakes have historically been drawn down prior to the onset of winter and two or three gates have been left open at each dam during the winter to ensure that the dams would not be overtopped and damaged during high runoff events.

   The evidence in the record indicates that, unless the dams were modified to allow winter gate operation, and unless two flood gates were modified at each dam to safely pass spring flows, limiting the drawdown of Ragged and Seboomook Lakes to 4.5 feet and 5.4 feet, respectively, would seriously compromise the structural integrity of the dams and could lead to dam failure. Dam failure would in turn result in significant environmental impacts in the lakes and their outlet streams and could cause or contribute to downstream flooding.

   In order to safely operate the gates at Ragged Lake Dam and Seboomook Dam throughout the winter and spring, access would have to be provided and maintained to the

dams for systems surveillance and gate operation and heating equipment would have to be installed to de-ice the gates. GLHA has estimated the combined capital cost of modifying flood gates and implementing winter gate operation at Ragged Lake Dam and Seboomook Dam at $1.81 million, with an additional $660,000 in annual operating costs.

b. Flood Control. While not a primary function of the storage project, the annual winter drawdown and spring refill of the impoundments provides a measure of downstream flood control. This flood control benefit exists whenever the project dams are able to store water in the spring that would otherwise be in excess of available storage in downstream storage reservoirs (primarily, Chesuncook Lake and the North Twin impoundment), thus adding to the total volume of flow released to the West Branch and main stem Penobscot River below Millinocket.

The evidence in the record indicates that operating Ragged and Seboomook Lakes, along with Canada Falls Lake, with the limited drawdowns needed to meet current aquatic life standards would reduce the flood storage capacity of the lakes by 4 billion cubic feet or 91,840 acre-feet. This represents a 44% reduction in the storage capacity of the lakes as currently licensed by FERC. While the adverse impact on flood control that would result from this reduction in flood storage capacity is difficult to quantify, it is nonetheless real.

c. Downstream Generation. The storage project contributes to downstream power generation when water that would otherwise be spilled at downstream storage reservoirs is temporarily stored in the project impoundments and then later released when it can be used for generation.

The evidence in the record indicates that operating Ragged and Seboomook Lakes, along with Canada Falls Lake, with the limited drawdowns needed to meet current aquatic life standards would result in the storage project contributing to approximately 14.9 million kilowatt-hours of electricity being generated annually at GLHA's downstream generating stations. This represents a 45% reduction from average annual generation based on the operation of the project as currently licensed by FERC.

d. Project Economics. Project economics are determined by the cost of project operation and the value of the electricity generated as a result of project operation.

The evidence in the record indicates that operating Ragged and Seboomook Lakes, along with Canada Falls Lake, with the limited drawdowns needed to meet current aquatic life standards, will result in a negative net annual economic value of about $1.8 million (obtained by subtracting the annual cost of project operation from the annual value of the electricity generated as a result of project operation).

GLHA has testified that, if Ragged and Seboomook Lakes are mandated to operate with the limited drawdowns needed to meet current aquatic life standards, the company would

be forced to surrender its FERC license for the storage project and abandon operation and maintenance of the Ragged Lake Dam and Seboomook Lake Dam because continued operation of the dams would not be economically viable. GLHA has also testified that, if Ragged and Seboomook Lakes are mandated to operate with the limited drawdowns needed to meet current aquatic life standards, the July 16, 2004 Offer of Settlement for the GLHA Storage Project will, by its terms, become null and void.

e. Invasive Species. Invasive aquatic organisms, including both plant and fish species, are a serious and growing problem in many parts of the State. Dams can serve as an important barrier to the upstream migration of invasive species.

The evidence in the record indicates that the North Branch and South Branch Penobscot River watersheds above Seboomook Lake represent one of the largest and least altered aquatic ecosystems in the northeastern Unites States, and that Seboomook Lake Dam currently provides an important barrier to the invasion of non-native aquatic species that occur downstream in the West Branch watershed. The future presence of the dam as a barrier to invasive species rests on its operation remaining economically viable.

f. Downstream Flows. The flows available to be released from the project dams are a function of the allowable drawdowns of the storage reservoirs.

The evidence in the record indicates that operating Ragged and Seboomook Lakes, along with Canada Falls Lake, with the limited drawdowns needed to meet current water quality standards would significantly reduce the flows available to maintain and enhance fishing and fisheries, aquatic habitat, and whitewater boating in the South Branch and West Branch of the Penobscot River and in Ragged Stream.

g. Discussion. In determining what is feasible, the Board looks to the totality of the circumstances, and takes into account both environmental and economic considerations, as well as any other relevant factors. In this case, those other factors include both practical and logistical problems associated with limiting lake level drawdowns to the extent necessary to meet water aquatic life standards, as well as the power generation, flood control, and flow regulation functions the dams serve. The Board's review of economic considerations requires scrutiny of the evidence presented, and an applicant's mere assertion that it is not economically feasible to operate under a particular water level regime is entitled to little weight. The Board must look behind that claim and be guided by the facts in the record. Here, the facts show that the limited drawdowns needed to meet aquatic life standards would result in substantial annual financial losses for the dam owner. As a result, the Storage Project clearly would not be economically viable if operated in the manner necessary to attain aquatic life standards. That clear lack of economic viability, combined with the environmental and other considerations discussed above, leads the Board to find that it is not feasible to operate Ragged and Seboomook

Lakes with the limited drawdowns needed to meet current Class GPA aquatic life standards.

Finally, the Board notes the absence of evidence in the record to challenge the conclusion that it is not feasible to attain the designated use of these lakes as habitat for fish and other aquatic life.

Further, based on the evidence in the record, the Board finds that it does appear to be feasible to operate Ragged and Seboomook Lakes in a way that would result in the attainment of a subcategory of the designated use of these lakes as habitat for fish and other aquatic life.

9. EVALUATION OF ALTERNATIVES

GLHA has evaluated various management options for the operation of the storage project. These options, which were determined in consultation with the Department and the U.S. Environmental Protection Agency, include a range of alternative drawdowns for Ragged and Seboomook Lakes, as well as for Canada Falls Lake and Caucomgomoc Lake. The alternative drawdowns under the various management options are summarized in the following table.

Storage Lake	Existing FERC License	Settlement Offer	FERC EA Alternative	DOI Alternative
Ragged	20 ft	20 ft	12 ft	12 ft
Seboomook	33 ft	17 ft	11 ft	11 ft
Canada Falls	26 ft	3.5 ft	6.5 ft	3.5 ft
Caucomgomoc	9.1 ft	9.1 ft	8 ft	8 ft

The feasibility of operating Ragged and Seboomook Lakes with alternative drawdowns to those needed to meet current water quality standards, and the impact of these alternative drawdowns on the use of Ragged and Seboomook Lakes as habitat for fish and other aquatic life, are discussed below.

a. Existing FERC License. The existing FERC license alternative is defined as the continued operation of the storage project under the terms of the current FERC license.

The evidence in the record indicates that the continued operation of the storage project under the terms of the current FERC license would not require winter gate operation or dam modifications, would maintain existing flood storage capacity of 9.1 billion cubic feet (208,936 acre-feet), would maintain the existing contribution to approximately 27.2 million kilowatt-hours of downstream power generation, and would maintain the current net annual economic value of the project of $84,522. This mode of operation would also maintain the flows available to maintain and enhance downstream uses and aquatic habitat.

The evidence in the record also indicates that the current drawdowns completely dewater the full pond littoral zone habitat of Seboomook Lake and Canada Falls Lake and maintain 52% of the littoral zone habitat of Ragged Lake. Under these conditions, the aquatic communities in all three lakes are severely altered and depleted.

b. Settlement Offer. The Settlement Offer alternative is defined as the operation of the storage project under the terms of the July 16, 2004 Offer of Settlement for the GLHA Storage Project.

The evidence in the record indicates that the operation of the storage project under the terms of the Settlement would not require winter gate operation or dam modifications, would reduce existing flood storage capacity by about 3% to 8.8 billion cubic feet (202,048 acre-feet), would reduce the existing contribution of storage project operation to downstream power generation by 5% to 15% to approximately 23.1 to 25.8 million kilowatt-hours annually, and would result in a net annual economic value of the project ranging from negative $64,709 to positive $35,291. It is noted that the economic value of the storage project under this management option rests on the ability of several unlicensed storage reservoirs (Penobscot Lake, Long Pond, Dole Pond, and Loon Lake) to contribute to downstream generation in any given year when being operated under the terms of the Settlement. GLHA has testified that it supports the Settlement and is prepared to operate the storage project in accordance with the terms of the Settlement.

The evidence in the record also indicates that limiting the drawdowns of the storage impoundments under the terms of the Settlement would maintain 52% and 19% of the littoral zone habitat of Ragged and Seboomook Lakes, respectively, and would maintain more than 75% of the littoral zone habitat of Canada Falls Lake. It is noted that the presence of a naturally-occurring hydraulic control point between the north and south basins of Ragged Lake limits the effect of drawdowns greater than 8 feet.

Finally, the evidence in the record indicates that operation of the storage project under the terms of the Settlement will result in significant benefits to fish and wildlife habitat, water quality, wetlands, recreation, tribal interests, public access, and land conservation throughout the upper West Branch watershed, and that most of these benefits will not be obtained under any other management option.

c. FERC EA Alternative. The FERC EA alternative is defined as the operation of the project under the terms proposed by the FERC staff in its Environmental Assessment of the project, dated June 12, 2002.

The evidence in the record indicates that the operation of the storage project under the terms of the FERC EA would not require winter gate operation but would require the modification of two gates at Seboomook Dam to safely pass spring flows, would reduce

existing flood storage capacity by about 26% to 6.7 billion cubic feet (153,832 acre-feet), would reduce the existing contribution of storage project operation to downstream power generation by about 14% to approximately 23.4 million kilowatt-hours annually, and would result in a negative net annual economic value of the project of $104,800.

The evidence in the record also indicates that limiting the drawdowns of the storage impoundments under the terms of the FERC EA would maintain 53% and 52% of the littoral zone habitat of Ragged and Seboomook Lakes, respectively, and would maintain 64% of the littoral zone habitat of Canada Falls Lake. It is noted that the presence of a naturally-occurring hydraulic control point between the north and south basins of Ragged Lake limits the effect of drawdowns greater than 8 feet.

Finally, the evidence in the record indicates that limiting the drawdowns of the storage impoundments under the terms of the FERC EA would reduce the flows available to maintain and enhance downstream uses and aquatic habitat.

d. DOI Alternative. The DOI alternative is defined as the operation of the project under the terms proposed by the U.S. Department of the Interior in the FERC relicensing process, and as evaluated by FERC in its June 12, 2002 Environmental Assessment of the project. It is noted that DOI has signed and testified in support of the Settlement Offer.

The evidence in the record indicates that the operation of the storage project under the terms of the DOI alternative would not require winter gate operation but would require the modification of two gates at Seboomook Dam to safely pass spring flows, would reduce existing flood storage capacity by about 29% to 6.5 billion cubic feet (149,240 acre-feet), would reduce the existing contribution of storage project operation to downstream power generation by about 17% to approximately 22.7 million kilowatt-hours annually, and would result in a negative net annual economic value of the project of $135,400.

The evidence in the record also indicates that limiting the drawdowns of the storage impoundments under the terms of the DOI alternative would maintain 53% and 52% of the littoral zone habitat of Ragged and Seboomook Lakes, respectively, and would maintain more than 75% of the littoral zone habitat of Canada Falls Lake.

Finally, the evidence in the record indicates that limiting the drawdowns of the storage impoundments under the terms of the DOI alternative would reduce the flows available to maintain and enhance downstream uses and aquatic habitat.

e. Discussion. In recommending a subcategory of the designated use of Ragged and Seboomook Lakes as habitat for fish and other aquatic life, it is appropriate to consider the feasibility and environmental impact of alternative drawdowns for the lakes.

GLHA is prepared to operate the storage project under the terms of the July 16, 2004 Offer of Settlement, despite the resulting limited net annual economic value of the project. Therefore, based on the evidence in the record, the Board finds that it appears to be feasible to operate Ragged and Seboomook Lakes with drawdowns of 20 feet and 17 feet, respectively. This represents a continuation of the current licensed drawdown of Ragged Lake and a significant reduction (from 33 feet) in the current licensed drawdown of Seboomook Lake.

The evidence in the record indicates that operating Ragged and Seboomook Lakes with drawdown limits of 12 feet and 11 feet, respectively, while operating Canada Falls Lake with the drawdown limits of either 3.5 feet or 6.5 feet would result in the storage project having a negative net annual economic value in excess of $100,000. Under these economic conditions, operation of the project would not be viable. If GLHA is forced to surrender its FERC license and abandon the operation and maintenance of the Ragged Lake Dam and Seboomook Dam because the storage project is no longer economically viable, then all of the economic and environmental values of project operation under other management options, including the Settlement, will be lost and Seboomook Dam will no longer serve as a barrier to invasive aquatic species. Therefore, based on the evidence in the record, taking into account environmental, economic and other relevant factors, the Board finds that it does not appear to be feasible to operate Ragged and Seboomook Lakes with drawdown limits of 12 feet and 11 feet, respectively.

The issue now is to consider the feasibility and environmental impact of intermediate drawdowns of Ragged and Seboomook Lakes, that is, drawdowns between 20 feet and 12 feet for Ragged Lake and between 17 feet and 11 feet for Seboomook Lake.

With respect to the environmental impact of intermediate drawdowns of Ragged Lake, the evidence in the record indicates that there is essentially no difference (52% verses 53%) between the amount of littoral zone habitat maintained at the alternative drawdowns of 20 feet and 12 feet, respectively, due to the presence of a naturally-occurring hydraulic control point between the north and south basins of the lake. Thus, all intermediate drawdowns are essentially equivalent in their impact on the designated use of the lake as habitat for fish and other aquatic life. Further, none of the intermediate drawdowns would provide sufficient littoral zone habitat to maintain the structure and function of the resident biological community and thereby meet current aquatic life standards.

With respect to the environmental impact of intermediate drawdowns of Seboomook Lake, the evidence in the record indicates that the amount of littoral zone habitat maintained at the alternative drawdowns of 17 feet and 11 feet increases from 19% to 52%. However, the value of this habitat gain is difficult to assess. The evidence in the record indicates that the greatest value comes from providing at least some permanent littoral habitat, which occurs with the proposed drawdown of 17 feet. In addition, any

benefit to aquatic habitat resulting from any intermediate drawdown would be less than 33% (the difference between the 19% and 52% of littoral zone habitat maintained at the drawdowns of 17 and 11 feet, respectively) and thus appears to be marginal at best. Finally, as was the case for Ragged Lake, none of the intermediate drawdowns of Seboomook Lake would provide sufficient littoral zone habitat to maintain the structure and function of the resident biological community and thereby meet current aquatic life standards.

With respect to the feasibility of intermediate drawdowns of both lakes, the evidence in the record indicates that the storage project is only marginally economically viable (that is, the project will have a positive net economic value in some years and a negative value in others) at the proposed Settlement drawdowns of 20 feet and 17 feet for Ragged and Seboomook Lakes, respectively, and while operating Canada Falls Lake with the limited drawdown of 3.5 feet needed to meet current aquatic life standards. Therefore, any reductions in these drawdowns would threaten the economic viability of the project while yielding a limited and uncertain environmental benefit.

Furthermore, any reduction in the proposed Settlement drawdowns that might be large enough to significantly benefit aquatic habitat in the lakes would result in the project having a substantial negative net economic value every year, and thus would not appear to be feasible. Conversely, any reduction in these drawdowns that might be small enough to maintain the economic viability of the project would not result in any significant benefit to aquatic habitat in the lakes, as discussed above. Finally, any reductions in these drawdowns may come at the expense of the Settlement becoming null and void.

Therefore, based on the evidence in the record, taking into account environmental, economic and other relevant factors, the Board finds that it does not appear to be feasible to operate Ragged and Seboomook Lakes with drawdowns limited to less than 20 feet and 17 feet, respectively.

10. CONCLUSIONS

Based on the above Findings of Fact, and the evidence contained in the record, including the Use Attainability Analysis prepared by GLHA, with its supporting documents, and the testimony presented at a public hearing, the Board CONCLUDES that:

1. The use of Ragged and Seboomook Lakes as habitat for fish and other aquatic life, as established for Class GPA hydropower impoundments, is not an existing use as defined in 38 MRSA Section 464(4)(F)(1).

2. The use of Ragged and Seboomook Lakes as habitat for fish and other aquatic life, as established for Class GPA hydropower impoundments, cannot be attained by implementing effluent limits required under the Clean Water Act for point source discharges and by implementing cost-effective and reasonable best management practices for nonpoint source control.

3. Ragged and Seboomook Lakes do not currently attain the designated use of habitat for fish and other aquatic life as established for Class GPA hydropower impoundments.

4. The establishment of a subcategory of the designated use of habitat for fish and other aquatic life, as established for Class GPA hydropower impoundments, for Ragged and Seboomook Lakes will not allow the introduction of a new discharge or the expansion of an existing discharge into these waters.

5. Attainment of the designated use of Ragged and Seboomook Lakes as habitat for fish and other aquatic life, as established for Class GPA hydropower impoundments, is not feasible because:

   - Ragged Lake Dam and Seboomook Lake Dam are hydrologic modifications that preclude the attainment of the designated use of Ragged and Seboomook Lakes as habitat for fish and other aquatic life, as established for Class GPA hydropower impoundments, and it is not feasible to restore these impoundments to their original condition or to operate the dams in such a way that would result in the attainment of the use, as provided in 40 CFR 131.10(g)(4); and

   - The construction and operation of Seboomook Dam are human caused conditions that prevent the attainment of the designated use of Seboomook Lake as habitat for fish and other aquatic life, as established for Class GPA hydropower impoundments, and it would cause more environmental damage to correct these conditions than to leave them in place, as provided in 40 CFR 131.10(g)(3).

6. The creation of a subcategory of the designated use of Ragged and Seboomook Lakes as habitat for fish and other aquatic life, as established for Class GPA hydropower impoundments, taking into account the effects of annual drawdowns of up to 20 feet and 17 feet, respectively, is warranted.

THEREFORE, pursuant to 38 MRSA Section 464(2-A), and on the basis of the Use Attainability Analysis prepared by Great Lakes Hydro America, LLC, with its supporting documents, and after holding a public hearing, the Board recommends that the Legislature adopt a subcategory of the designated use of Ragged and Seboomook Lakes, located on the West Branch Penobscot River and its tributaries, as habitat for fish and other aquatic life, as established for Class GPA hydropower impoundments, taking into account the effects of annual drawdowns of up to 20 feet for Ragged Lake and 17 feet for Seboomook Lake.

DONE AND DATED AT BRUNSWICK, MAINE, THIS 17th DAY OF November, 2004.

BOARD OF ENVIRONMENTAL PROTECTION

BY: _____
Richard E. Wardwell, Chair

PLEASE NOTE ATTACHED SHEET FOR BOARD RECONSIDERATION AND JUDICIAL REVIEW PROCEDURES